

ABSTRACT OF THE DISCLOSURE

A method and apparatus which provide solutions for avoiding journal overflow in after and before journal methods of a backup and recovery system used with a storage system. The after journal method solutions, which are
5 conducted when the amount of free space reaches a threshold, include periodically taking a new snapshot and deleting the oldest journal, periodically taking a new logical snapshot and deleting the oldest journal, stopping the taking journal entries when the journal volume is full, and stopping the taking journal entries when the journal volume is full and then switching to bitmap
10 management. The before journal method solution, which is conducted when the amount of free space reaches a threshold, includes applying wrap-around overwriting to overwrite the oldest journal entry by the newest journal entry.